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The Rockefeller University

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news & notes

April 19, 1996 Volume 6, Number 25

The Rockefeller University



University celebrates gardens

The university's annual Azalea Festival takes place this year Sat., May 4 and Sun., May 5 from noon to 4:00 P.M. Presented in cooperation with The New York Botanical Garden, the festival features tours of the 15-acre campus, designed by world-renowned landscape architect Daniel Kiley, at 1:00 P.M. and 3:15 P.M. on both days.

The festival includes two public lectures: David Lentz, director of the Graduate Studies Program at The New York Botanical Garden, will speak on "House Gardens of the Ancient Maya," at 2:15 P.M. on Sat., May 4, and Firdaus Dhabhar, RU graduate fellow, will give a talk entitled "The Good News About Stress" at 2:15 P.M. Sunday.

In 1995, the East Side Association of New York City presented its Green Thumb Award to the university for its achievements in landscaping, honoring in particular the Azalea Festival.

When Rockefeller, which began in 1901 as the Rockefeller Institute for Medical Research, expanded in the 1950s to become a university

offering doctoral degrees, the transformation included the construction of buildings designed by the late architect Wallace Harrison, whose work included collaborations on Lincoln Center, Rockefeller Center, and the United Nations.

Former RU president Detlev Bronk invited Kiley to contribute to the renovation. He designed plantings, formal gardens, and fountains. In 1994, the university refurbished and augmented his design with funding provided in part by the Mary Lasker Charitable Trust's Salute to the Seasons. The project added some 10,000 bulbs and dozens of plants and shrubs.

Lentz, who speaks Saturday, is also an adjunct faculty member at New York University. His research focuses on pre-Columbian use of plants in Central America. He earned his doctorate in biology from the University of Alabama in 1984. Author of more than 40 professional articles, Lentz is a member of the Society for Economic Botany, Society for American Archaeology, and American Anthropological Association.

Dhabhar, a member of the McEwen lab who recently presented his thesis talk, explores how the brain may regulate an organism's ability to fight disease. Specifically, he examines how stress hormones control the distribution of immune cells in the body.

All are welcome to attend any segment of the free program. Members of the university community who wish to assist in greeting visitors and escorting the tours may contact Gabrielle Riera, x8969. The public can receive more information by calling 327-8967. The festival will be held rain or shine.

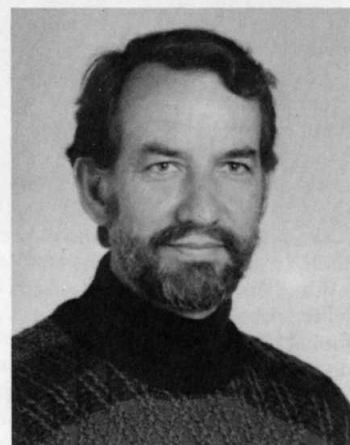
Biochemist to map out mechanics of myosin molecules at Friday lecture

James A. Spudich, professor of biochemistry and developmental biology at Stanford University School of Medicine, discusses "Single Myosin Molecule Mechanics: How Molecular Motors Work" at the Friday lecture today (Apr. 19).

Spudich studies the mechanism by which the molecular motor myosin generates the forces and motions that underlie muscle contraction, cytokinesis or contraction in the cytoplasm that separates nascent cells during cell division, and cell movement. Work in his laboratory focuses on the establishment of in vitro assays for molecular motor function and the establishment of a cell system for molecular genetic analysis of myosin.

Using the cellular slime mold *Dictyostelium* as a model, Spudich and his colleagues provided the first genetic proof that myosin is required for cytokinesis, changes in cell shape during morphogenesis, and capping of cell surface receptors. He and his co-workers designed and developed in vitro assays for ATP-dependent movement of purified myosin on filaments reconstituted from purified actin. His lab developed a feedback-enhanced laser trap to measure directly small unitary displacements and unitary forces exerted by a single myosin molecule during cycles of ATP hydrolysis.

"Jim has pioneered the integration of molecular genetics and



James A. Spudich is developing in vitro assays for molecular motor function and a cell system for molecular genetic analysis of myosin.

structural biology with functional measurements on single motor molecules to examine how they transduce the chemical energy of ATP hydrolysis into mechanical work," said Professor David Gadsby, who introduces Spudich today.

Spudich received his Ph.D. from Stanford University in 1968. After postdoctoral studies at Stanford and the MRC Laboratory of Molecular Biology at Cambridge University, he joined the faculty of the University of California, San Francisco in 1971. He was promoted to professor in 1976, and in 1977 moved to the Stanford University School of Medicine. From 1979 to 1984 he was chairman of the Department of Cell Biology. He was named Leishman Professor of Cardiovascular Disease in 1987 and became chairman of the Department of Biochemistry in 1994.

A member of the National Academy of Sciences, Spudich's many awards and honors include the Rosenstiel Prize, the Basic Science Research Prize from the American Heart Association, and the Lifetime Research Career Award from the Biophysical Society. Spudich, who served as president of the American Society for Cell Biology in 1989, is senior editor of *Annual Review of Cell and Developmental Biology*.

The lecture will be held at 3:45 P.M. in Caspary and preceded by tea at 3:15 P.M. in Abby Aldrich lounge. All are welcome.

Reminder Zuckerman to speak on science prizes

Harriet Zuckerman, vice president of the Andrew W. Mellon Foundation and adjunct at RU, will discuss "The Proliferation of Prizes" at the Zanvil A. Cohn Forum on Health Affairs Tues., Apr. 23.

The talk will take place at 5:30 P.M. in Abby Aldrich Rockefeller Dining Room, preceded by sherry at 5:00 P.M. All are welcome.

2 Halls
have
history

3 HIV-1
hideout

4 Sandra
Handwerger
(1955-1996)

Photoessays in campus corridors present university's past

Photoessays displayed in campus byways contain more than 100 images from the history of the Rockefeller University and related matters, for perusal by those with passing curiosity and a moment to spare.

On the A (tunnel) level of Founder's Hall are 12 quaint pictures of campus grounds and nearby streets from the early 20th century. The oldest, dated 1900, shows children playing near the dilapidated summer residence of the New York family that sold this land to the Rockefellers in 1903. Another image shows a boxing match sponsored by the Pastime Athletic Club, which also owned part of these 15 acres.

On the first floor of the Rockefeller University Hospital hang a formal photo essay and historical documents on its early achievements. Artifacts include typescripts of early patient records and a letter from U.S. President Theodore Roosevelt to Rockefeller scientist Alexis Carrel, commending him on his experimental treatment of wound infections. The exhibit contains a 1917 photo of the campus's barrackslike "War Demonstration Hospital," where soldiers from the Great War were treated.

A series of 25 Hospital staff por-

traits extends along the north-south corridor of the first floor and affords the opportunity to note that while the 1910 medical staff includes no women, the group portrait of 1994 contains eight.

In the tunnel outside Plant Operations (Boiler House 105) is a chronology of the construction of the university's first powerhouse, portions of which are used today. Ten photos from 1903 to 1916 document the first stages, when work-

ers and horses tore into the rocky site; the erection of the wooden scaffolding on which masons assembled the 11 elegant stone arches that today can only be seen from the FDR Drive and East River Esplanade; and the completed building.

In the John D. Rockefeller, Jr. and David Rockefeller Research Building, the corridor south of the foyer contains eight photos from the building's dedication and child-

hood images of David Rockefeller, now honorary chairman of the university Board of Trustees. In one 1955 picture, David Rockefeller and former university President Detlev Bronk examine with pleasure the architect's model of Caspary Hall and Dome.

Miscellaneous photos and artworks of the university and its administrators and scientists are scattered throughout the library, Founder's Hall, and Hospital rooms and corridors. The ground level of Caspary Dome also displays antique scientific instruments invented by Rockefeller scientists.

Those with more interest in Rockefeller history may consult the 1964 book, *A History of The Rockefeller Institute, 1901-1953, Origins and Growth*, by George Corner. Professor Emeritus Merrill Chase is also penning a history of the institution and has a unique collection of historical photos.

The Rockefeller Archive Center possesses more than 50,000 historical images and more than 5,000 cubic feet of records on the university, most of which is open to members of the campus community. The Center also possesses originals of most of the material in the RU hallways.

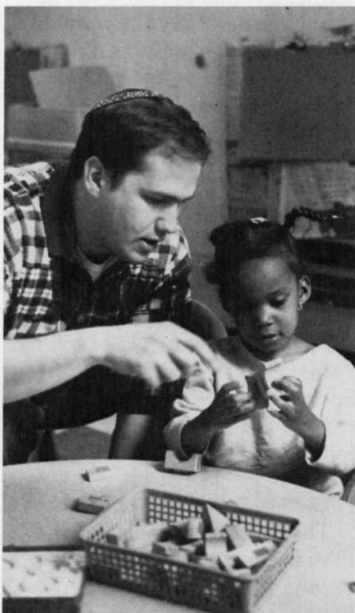


A historical image on display at the Hospital has the legend: "Controlled oxygen concentration in a specially constructed room. A new venture in human physiology and treatment, as pioneered by the Rockefeller University Hospital in 1920."

Profile Chayim Dimont

Position: Head Teacher, Yellow Room, Infant-Toddler Center.

Scientists at age 1: "Their lives are experiments and discoveries. The



first time one girl combined white and red paint, she shouted, 'I made my favorite color pink!' We carefully allot colors, in part to facilitate this kind of discovery. Seeing kids realize things is my favorite part of the job."

Mentoring toddlers: "This time of life is crucial. Kids from ages 1 to 3 are probably learning more than they will during the rest of their lives. Then, you meet them five years later and you see what you helped shape."

Inspiration: "My father was a high school teacher. When he died, I began hearing stories from his former students about how much he did for them. Teachers offer society the chance to learn, to be better, to understand new ideas and new ways."

Breaking a barrier: "This is predominantly a woman's field, but that's changing. People start out with more anxiety about a male caregiver, but I made visits to the kid's homes in September, and I call parents monthly to chat."

"Each teacher brings something

different to the learning experience, and those differences are bigger than whether you are male or female."

Pet peeve: "People often think infant-toddler caregivers are just babysitters, but a lot of research and thought informs what we do. At weekly meetings, we discuss all our activities. We discuss the professional literature, the theories, and that stuff helps, but it doesn't capture what we do. Instead of saying 'Stop that!' we model saying 'Pulling on my hair hurts!'"

Educational pursuit: Master's in infant and parent development at Bank Street School of Education.

Career goal: Director of a day-care facility. "I like working in the classroom, and to be a good director, you have to know the basics. But I'll be getting married soon and we plan to have a family someday, and teacher's salaries are still very low."

Existential existence: "Kids pick up on everything. I think all the time about how I speak to them, how to

moderate their interactions to give them an appropriate amount of control, how far away from me on the sidewalk they can walk. Caregivers are perpetually in a state of heightened awareness, like the kids."

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Team finds AIDS virus nesting in mucosal tissue of HIV-infected people

First evidence for replication in sites other than lymph system

by Marion E. Glick

Scientists know that HIV-1 grows in cells from the blood and inside lymph glands, but observations made by a team of researchers led by Professor Ralph Steinman and reported in the April 5 *Science* reveal hard evidence of the virus's replication in the body's mucosal surfaces and mucous membranes.

The mucous membranes that lie above the lymph glands of the throat can be a major site of HIV-1 replication in people infected with the virus that causes AIDS but who have not yet developed clinical symptoms, he reported in the paper coauthored by researchers from Rockefeller University and the Armed Forces Institute of Pathology (AFIP).

"By identifying a site in the throat's mucous membranes where HIV-1 is so abundant in patients who are clinically well, we know that HIV-1 infection is not a slow or covert process," said Steinman, who heads the Laboratory of Cellular Physiology and Immunology and is a senior physician at the Hospital.

HIV capitalizes on dendrite function

The findings suggest a role for mucosal surfaces in several modes of HIV-1 transmission. These membranes line body cavities, such as the mouth and genital openings, as well as internal organs such as the respiratory tract and the digestive system.

"Infants who swallow virus from infected mothers during birth may be infected initially in the mucosal surface of the tonsils," explained Steinman. "Also, inflammation of genital mucosal surfaces may promote infection after exposure to HIV-1 because dendritic cells and T

cells, both involved in immune system responses, may interact in these tissues. Finally, in order for HIV-1 to be transmitted by blood, the virus may home to dendritic cells and T cells at mucosal surfaces like that of the adenoid."

In the study, the team found that the driving force of HIV-1 replication in mucous membranes is the dendritic cell, discovered by Steinman and the late Professor Zanvil Cohn at Rockefeller in 1973. Dendritic cells are white blood cells with threadlike tentacles that capture bits of protein from infectious agents. Usually this capture leads to the development of strong immunity, the ability of the immune system to fight infections. However, HIV-1 takes advantage of the situation and uses dendritic cells to help itself multiply.

"From the evidence we gathered in laboratory experiments, HIV-1 infection looks more and more like a battleground in which dendritic cells control both armies," said Assistant Professor Melissa Pope, coauthor of the *Science* paper. "On the one hand, the dendritic cell

promotes virus replication, while on the other, the cell likely induces a strong immune response to the virus."

Giant cells are no mere curiosity

For the study, the research team examined tissue from 13 HIV-1-infected patients, aged 20 to 42, two of whom were female. Each had surgery between 1989 and 1995 to remove an enlarged tonsil. With the exception of one patient who refused testing, all patients had antibodies to HIV. Of these, two experienced AIDS symptoms, most denied high risk behavior, and 11 did not know they had been infected.

The AFIP scientists located HIV-1 from patients' adenoids, lymph glands in the throat that are covered by a mucous membrane with many folds, which normally allow infectious agents to enter and stimulate the immune system. Specifically, the virus resided in syncytia cells within the membrane. Syncytia are unusual giant cells that

form when certain viruses cause many immune system cells to fuse together. As a result, syncytia have many nuclei, which house genetic material. In a search to find what caused the syncytia, the scientists identified HIV-1 as the culprit.

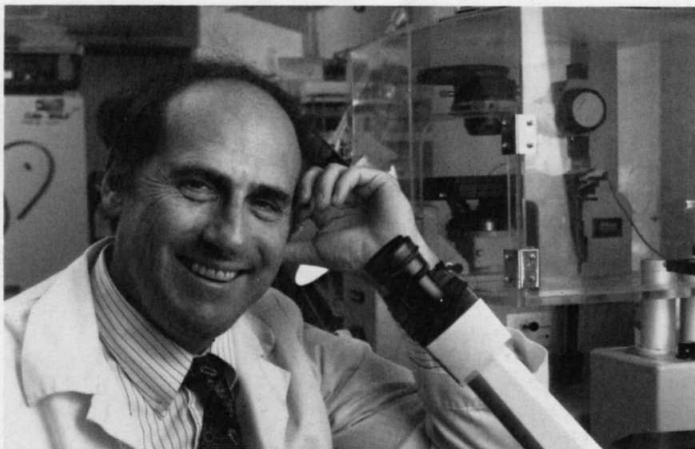
"Before our study, syncytia have not been so readily seen during an HIV-1 infection," reported coauthor Sarah S. Frankel, AFIP pathologist. "However, data from Dr. Steinman's lab had suggested that syncytia would be the major sites for the multiplication and spread of HIV-1. With our finding of syncytia in the 13 patients we examined, the giant cells are far from a test tube curiosity."

The investigators identified cells and syncytia in the adenoid's mucosal surface that contained one HIV protein, p55gag, which serves as an essential scaffold for building new virus.

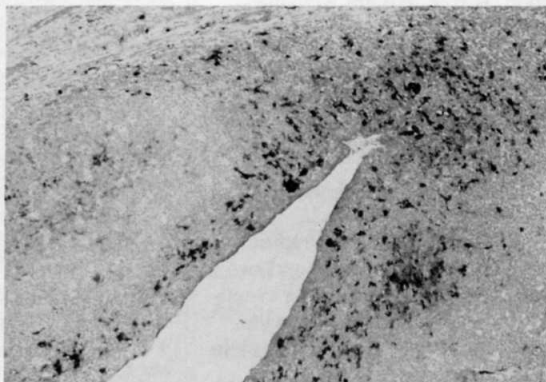
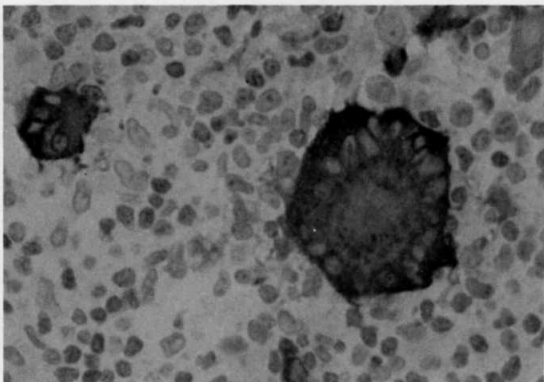
"From our laboratory experiments, we know that HIV-1 exploits mucosal dendritic cells and CD4⁺ T cells to form syncytia," said Steinman. "The findings compel us to look within dendritic cells to identify important controls for virus multiplication. We think that studying dendritic cells will be important to designing HIV-1 vaccines, because it is within these cells that the virus must be stopped."

Steinman, Pope, and Frankel's coauthors are Bruce M. Wenig, Allen P. Burke, Poonam Mannan, Lester D. R. Thompson, Susan L. Abbondanzo, and Ann M. Nelson, of the AFIP.

The National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health, the Dorothy Schiff Foundation, the Norman and Rosita Winston Fellowship Program, and the DirectEffect AIDS Research Program supported the study.



For their study on sites of HIV-1 infection, Professor Ralph Steinman (left) and Assistant Professor Melissa Pope collaborated with researchers from the Armed Forces Institute of Pathology.



Left: HIV-1 infection causes immune system cells to fuse, forming a giant syncytia cell with several nuclei. Steinman and his colleagues have found such giant cells in mucous membranes of the adenoids, a previously unknown site of HIV replication. **Right:** The mucosal surface of the adenoid has many shallow foldings that normally help infectious agents access the underlying lymph tissue. In this fold, HIV-1 has infected the immune system's dendritic cells, marked by a dark stain.

ID cards will give employees campus access during activist demonstration

To ensure that campus activities are not disrupted in an upcoming demonstration about animal rights, Joseph Nekola, director of security, is asking university faculty, staff, and students to be prepared to display their badges when entering campus during the week beginning Mon., April 22.

The demonstration, organized by In Defense of Animals, is planned for Thurs., Apr. 25, from 4:30 P.M. to 7:30 P.M.

"The members have received a permit from the New York City Police Department to assemble on York Avenue near the 66th Street entrance," Nekola explained.

Some studies at the university involve the humane use of animals, noted Michael Hayre, RU veterinarian and director of the Laboratory Animal Research Center.

"The university is fully commit-

ted to safeguarding the well-being of laboratory animals and using them in research only when no alternatives exist," Hayre said. "We uphold a humane program of animal care and use, and our practices conform to, and often exceed, all prevailing national standards."

To work with animals, an investigator must receive approval from the university's Animal Care and Use Committee, in accordance with federal laws. The committee, headed by Emil Gotschlich, Gwin-Follis Chevron Professor, reviews every proposed project, as does the university's veterinary staff.

The university's animal research also receives stringent reviews from the National Institutes of Health, the U.S. Department of Agriculture, the Food and Drug Administration, New York State Department of Health, and the American

Association for the Accreditation of Laboratory Animal Care.

"Virtually every medical advance in the last 50 years has depended on animal research in one way or another," said Gotschlich. "The advances range from vaccines against polio and rubella to insulin for diabetics, coronary bypass surgery, medication for high blood pressure, phototherapy for infant jaundice, cataract surgery, kidney dialysis, hip replacements, and leukemia chemotherapy."

A copy of the university's laboratory animal policy is available from Hayre, x8535, or the Office of Public Affairs, x8967. Anyone with questions about the policy should contact Hayre or Public Affairs. Public and press inquiries should be directed to Marion E. Glick, director of communications, x7698.



Security guards under the direction of Joseph Nekola, director of security at RU, may ask employees to display university identification next week.

Potpourri

Christian Steiner



Violinist Livia Sohn and pianist Robert Koenig will perform works by Beethoven, Debussy, Paganini, and Sarasate at the Tri-Institutional Noon Recital today (Apr. 19). The concert, to be held in Caspary Auditorium at noon, is free. All are welcome.

Construction

New flooring will be installed on the first level of the Plaza Building in the area between the elevators leading toward the RRB Building on one side and the 64th Street receiving area on the other. Work will take place from Fri., Apr. 19 at 6:00 P.M. through 6:00 A.M. Mon., Apr. 22. Access to the Plaza Building via the 64th Street entrance will not be possible during that period. Use instead the entrance to the corridor between LARC and Weiss Research Building.

Clinical Research Seminar

Stanley Wolf, senior scientist at the

Genetics Institute in Andover Mass., discusses "IL-2: A Key Modulator of Immune Function" at the Clinical Research Seminar Wed., Apr. 24 at noon in Nurses' Residence 110B.

Used equipment

Three low-end Silicon Graphics workstations (one Indigo and two Indys) are for sale. Good for visualization and modest computation. For more information, call Marcelo Magnasco, x8542.

Alumna

The University of California Board of Regents named M.R.C. Greenwood, '73, chancellor of UC Santa Cruz.

Sandra Handwerger, microbiologist, dies at 41

Sandra Handwerger, assistant professor in the Tomasz lab and Johanna Maria Fraenkel Clinical Scholar at the RU Hospital, died at home Mon., Apr. 15, of metastasized breast cancer. She was 41.

"Sandra Handwerger was in the vanguard of scientists working to understand antibiotic resistance, and she lived for her research. In recent months, she fought her disease with the same dedication," said President Torsten Wiesel. "The university community, especially members of the Tomasz lab and Hospital staff, will miss her commitment and spirit. We extend heartfelt condolences to her husband."

Handwerger studied the mechanism and spread of resistance to the antibiotic vancomycin. A once-powerful remedy nicknamed "the drug of last resort," vancomycin's efficacy is falling prey to resistant enterococci, posing a serious threat in hospitals, where doctors rely on the drug to combat hospital-acquired infections.

Given the headlines now devoted to vancomycin resistance, it is ironic that when Handwerger began to study the topic in the 1980s, a grant proposal of hers was rejected on the ground that her topic was of "little biomedical relevance."

Handwerger earned her undergraduate degree Phi Beta Kappa from Vassar College in 1976 and received her M.D. from Columbia

University College of Physicians and Surgeons in 1980. After a three-year residency at Beth Israel Medical Center, she joined Tomasz's Laboratory of Microbiology for a two-year postdoc. She then held positions at Beth Israel and Mount Sinai School of Medicine before rejoining the university in 1992.

Members of the university community are among the speakers at her funeral service, which takes place today (Fri., Apr. 19) at the Riverside Memorial Chapel, West 76th Street and Amsterdam Avenue, at 11:15 A.M.

The university has established a memorial fund in Handwerger's name. Donations, payable to The Rockefeller University, may be sent to Olivia Buckley, Box 164.

